

ILLNESSES IN CITRUS PICKING CREW OF
KAWEAH LEMON COMPANY, LEMON COVE, TULARE COUNTY,
CALIFORNIA ON JUNE 12, 1975
ATTRIBUTED TO EXPOSURE TO PARATHION AND PARAOXON

ACF 59-073 July 7, 1975

California Department of Food and Agriculture
Division of Pest Management, Environmental
Protection and Worker Safety
Worker Health and Safety Branch
1220 N Street, Sacramento, California 95814

July 7, 1975

ILLNESSES IN CITRUS PICKING CREW OF KAWEAH LEMON COMPANY, LEMON COVE,
TULARE COUNTY, CALIFORNIA ON JUNE 12, 1975 ATTRIBUTED TO EXPOSURE TO
PARATHION AND PAROXON

California Department of Food and Agriculture
Agricultural Chemicals and Feed

John C. Hillis, Chief
Agricultural Chemicals and Feed

June 16, 1975

Sacramento

- Keith T. Maddy, Staff Toxicologist
Agricultural Chemicals and Feed

Illness in Citrus Picking Crew - June 12, 1975
(As Incident Appeared Friday Evening)

It appears that 20 male pickers with Spanish surnames (and possibly non-citizens) were picking citrus for Kawah Lemon Co. of Lemon Cove in Tulare County in a grove that was sprayed with eight pounds of wettable powder with 35 percent content of ethyl parathion (two pounds actual ethyl parathion per acre) on May 19, 1975. On the 11th of June (Wednesday) on the first legal rentry day, the pickers began work and after two hours of picking on Thursday, the workers became ill and began leaving the grove.

Three were taken to the hospital and were diagnosed as having organophosphate poisoning Thursday night.

John Carter of the Tulare County Agricultural Commissioner's Office and Jim Waters of the County Health Department began their investigation Friday morning. John reported Nelson Carins and Dave Carins as co-owners of the Kawah Lemon Co. as having a very good record of compliance with all pesticide regulations and the owners seemed baffled at the physician's diagnosis since the growers had observed the prescribed safety interval.

John said the non-hospitalized workers were scattered to wherever they were living and almost impossible to locate. They did talk to four non-hospitalized workers who said they had been very sick with nausea, vomiting, dizziness, and weakness; they indicated that all their fellow workers became sick. Jim Waters determined that they drank water from a ditch at one time and that they had gathered dead twigs from under the trees for a fire at noon on the first day. They cooked tortillas by laying them in the coals of these twigs.

John Carter said that Dave Poppendorf of UCB has sampled the grove in question and a previous grove the men had been in and that the samples of leaves, dust, and twigs could be made available by Dr. Robert Spears if necessary for EPA analysis.

John said he had collected some samples of leaves and twigs and sent them by regular mail Friday noon to the Sacramento EPA Laboratory.

SURNAME

Maddy

John C. Hillis
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John said the growers were planning to resume the harvest on Monday. I told John to call the Agricultural Commissioner and ask him to call the growers to the effect that a quarantine had just been placed on their grove by the Director of the Department of Food and Agriculture and that we would be down Monday a.m. to collect official samples which we would hand carry Monday evening into Sacramento for analysis Monday night.

John Carter said that Dr. Chamberlain, County Health Officer, was aware of the incident and the Health Department was contacting the hospital and physician in charge of the cases to inquire about the cholinesterase test results and responses to atropine treatment.

I called several people Friday evening of the State Health Department without success but I did reach Dr. Richard Lyness at his home in Fresno. He said he and Arcadio Viveros would go out and try to find more of the workers and to try to get them to volunteer for blood tests which he would have run at their new test facility at Orange Cove.

Friday evening I also contacted these persons concerning the incident:

John Hillis	Delvan Dean	James Knaak	Wendell Kilgore
Ronald Mull	Charles Kahn	Robert Spears	David Conrad
Gary Sprock			

It is surprising that this incident occurred Thursday was under local investigation all day Friday and we just happened to hear about it from Dr. Robert Spears by telephone from Berkeley to my office in Sacramento at 4:50 p.m. Friday.

Saturday and Sunday Dr. Richard Lyness and Arcadio Viveros explained to the grower his responsibility for an occupationally acquired illness under California law. He agreed to pay for any necessary medical attention for the other workers. By 6:00 p.m. Sunday, 12 more of the workers had been located, examined, tested, and treated at the outpatient clinic at the Kaweah Delta Hospital in Visalia.

Of the three hospitalized and the 12 outpatients, all 15 had cholinesterase values for both plasma and red cells below the normal range. One picker was located who said he had not been ill and he declined medical attention.

There are three or four workers still to be located.

It now appears that there may have been possible worker exposure in three citrus plots. On one plot, the 21-day safety may not have expired. The grower also advises that he had *thrip* bait flown on shortly before harvest. *Rhynodyne* was to have been used. He wonders if an organophosphate went on by mistake.

John C. Hillis
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Gary Sprock and I will fly down Monday a.m. to arrive in Visalia at 9:30 a.m. We will meet with the State Health Department, County Agricultural Commissioner, and County Health Department at the Agricultural Commissioner's Office and then we will go on to the three groves. We will collect official samples of leaves, place them on ice, and I will bring them back arriving at the Sacramento Airport at 7:50 a.m. I will have samples at our lab by 8:30 p.m. We hope for some results first thing Tuesday morning.

If time permits Monday, we may sample some nearby groves with similar spray history to determine residue levels also.

Gary Sprock will stay over on Tuesday for collection of more samples. He is scheduled to fly home to Sacramento Tuesday evening.

Sunday evening, I notified Linda Scott of the State Health Department of the incident. Dr. E. Kahn is still out of the State.

I was not able to locate Herb Bowden over the weekend.

cc D. J. Bingham

KTM/8-K-3-5

Memorandum

To : Delvan Dean, Program Supervisor
Agricultural Chemicals and Feed

Date : June 18, 1975

Place: Sacramento

From : Department of Food and Agriculture - Keith T. Maddy, Staff Toxicologist
Agricultural Chemicals and Feed

Subject: Investigation of Pesticide-Related Illnesses of Employees of Kaweah Lemon Co.,
June 12, 13, 1975, at Lemon Cove, California

I acquired information on the particulars of this incident from a telephone conversation with John Carter of the Tulare County Agricultural Commissioner's Office on June 13; a telephone conversation with Dr. Richard Lyness of the California Department of Health on June 15; and an on-site investigation on June 16 where exposure of the workers apparently occurred.

During my June 16 investigation, I was accompanied by Agricultural Inspector Gary Sprock and we acquired information from:

Dr. Richard Lyness - California Department of Health
Mr. Arcadio Viveros - California Department of Health
Mr. John Carter - Tulare County Agricultural Commissioner's Office
Mr. Bernis Naylor - Tulare County Agricultural Commissioner's Office
Mr. Nelson Carins - Kaweah Lemon Co.
Mr. David Carins - Kaweah Lemon Co.
Mr. Joseph Doherty - Division of Industrial Safety

The Carins' provided us with records and maps indicating the work-history, pesticide spray histories on crops, and work locations of the affected work crew for 30 days prior to the first day of illnesses. We informed the Carins of our plans to collect samples of leaves of trees in probable exposure sites and of their right to collect simultaneous identical samples for analysis by a laboratory of their choosing and at their expense. They declined to exercise this option.

The Carins were advised of their responsibility of informing the California Division of Industrial Safety of this incident because of the numbers of workers involved.

We determined that the field work for the first three weeks of the 30-day period of possible exposure under study involved work as pruners in lemon groves without known pesticide applications between January 1, 1975 and when the pruning was completed.

The three groves with possible pesticide exposure potential were sampled:

Keith T. Maddy

Delvan Dean
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Kaweah Field Number	Crop	Job	Date of Work	Pesticide Used	Probable Date of Applic.	Days Apparently Entered Before Expiration of Safety Interval
3-12	Oranges	Picking	6/9-10 (all day)	Dimethioate	6/6	None
35-12	Oranges	Picking	6/11 (8 hours)	Ethyl Parathion	5/26	5
35-1	Oranges	Picking	6/12 (6-8 hours)	Ethyl Parathion	5/22	1

We were directed to the locales of each work place in each grove by Mr. John Carter. We collected representative samples of more than 300 leaves with leaf punches in each of the above three groves. Samples were collected from a neighbor's grove just east of field 35-1 and a water sample was collected by John Carter from a ditch that it is alledged that workers drank from. These samples were labeled and were packed in wet ice and kept in my personal custody in an automobile until reaching the Visalia Airport. They were then kept in my personal custody on an airplane seat beside me to Sacramento, California where I arrived at 8:15 p.m. I personally transported these samples by automobile to 1220 N Street, Sacramento, where I personally delivered these samples to Scott Fredrickson and Peter Schloker, Agricultural Chemists of our Department. We unpacked the samples, removed about ten pounds of wet ice, and determined that the labels were intact. The samples were immediately set up for analysis of dislodgable, penetrated, and total residues by the technique known as the Gunther-Westlake technique. The analyses were completed at 4:00 a.m. on June 17 and the results are attached.

The conversations with Dr. Lyness and Mr. Carter are essentially documented in their separate reports and are not repeated here.

In retrospect, it appears that these workers received their first substantial field-work exposure to a cholinesterase inhibiting sustance on June 11 in the orange grove known as 35-12. Considering the amount of pesticide applied and the amount of residue found, it appears that the application of ethyl parathion was probably made during the last week of May.

The amount of ethyl parathion found on the leaves is similar to amounts which have been found on leaves on citrus trees in other summer pesticide exposure incidents involving citrus pickers in California.

Delvan Dean
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The possible additional exposure to organophosphate pesticides of those workers who were living in a citrus grove was probably contributory to the development of some, but not all, the illness because it appears that not all workers were exposed to this additional exposure to pesticide residues during non-work hours.

Violations of the California Food and Agricultural Code Worker Safety Regulations that I think occurred are listed below:

1. Entry to field 35-12 five days too early.
2. Entry to field 35-1 one day too early.
3. Failure to take three workers to physician on Thursday when obviously ill from symptoms indistinguishable from pesticide illness.
4. Failure to take the remainder of ill workers to a physician on Saturday even when reminded by State Health Department of grower's legal responsibility.
5. Failure to keep adequate application records. Records did not agree with signs, use reports, testimony of K. Lemon Co. staff or with the apparent work practices.
6. Failure to provide hand wash facilities.

I recommend that the Department consider recommending to the Tulare County Agricultural Commissioner that criminal charges be filed against the officials of the Kaweah Lemon Co. by the Tulare County District Attorney.

I recommend that the Tulare County Health Officer advise the grower that:

1. All exposed workers be placed under medical supervision of a physician in private practice at the grower's expense.
2. That all their work clothes be collected and burned or laundered under very carefully regulated conditions.
3. That all workers be required to wash their bodies thoroughly with strong soap and warm water under supervision.
4. That the workers be provided with clean clothing and housing and be required to use these.
5. That the workers be kept out of any possible work situations involving exposure to cholinesterase inhibiting substances for 30 days. That an inspector of the Tulare County Agricultural Commissioner's Office, fluent in Spanish, explain to the workers their rights to this type of work-place protection. That the Tulare County Agricultural Commissioner approve each job this work crew performs to for a 30-day period.

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June 18, 1975

6. That after 30 days, plasma and red cell cholinesterase tests be made on each worker.
7. That the results of these tests be discussed by the medical supervisor with either the County Health Officer or Dr. E. Kahn of the State Health Department before a final decision is made on reentry of any of these workers to any possible work-place exposure to cholinesterase inhibiting substances.
8. That the Tulare County Agricultural Commissioner's Office maintain close surveillance on these workers' work situations for 30 days after permission is granted for return to work without the above described special restrictions.

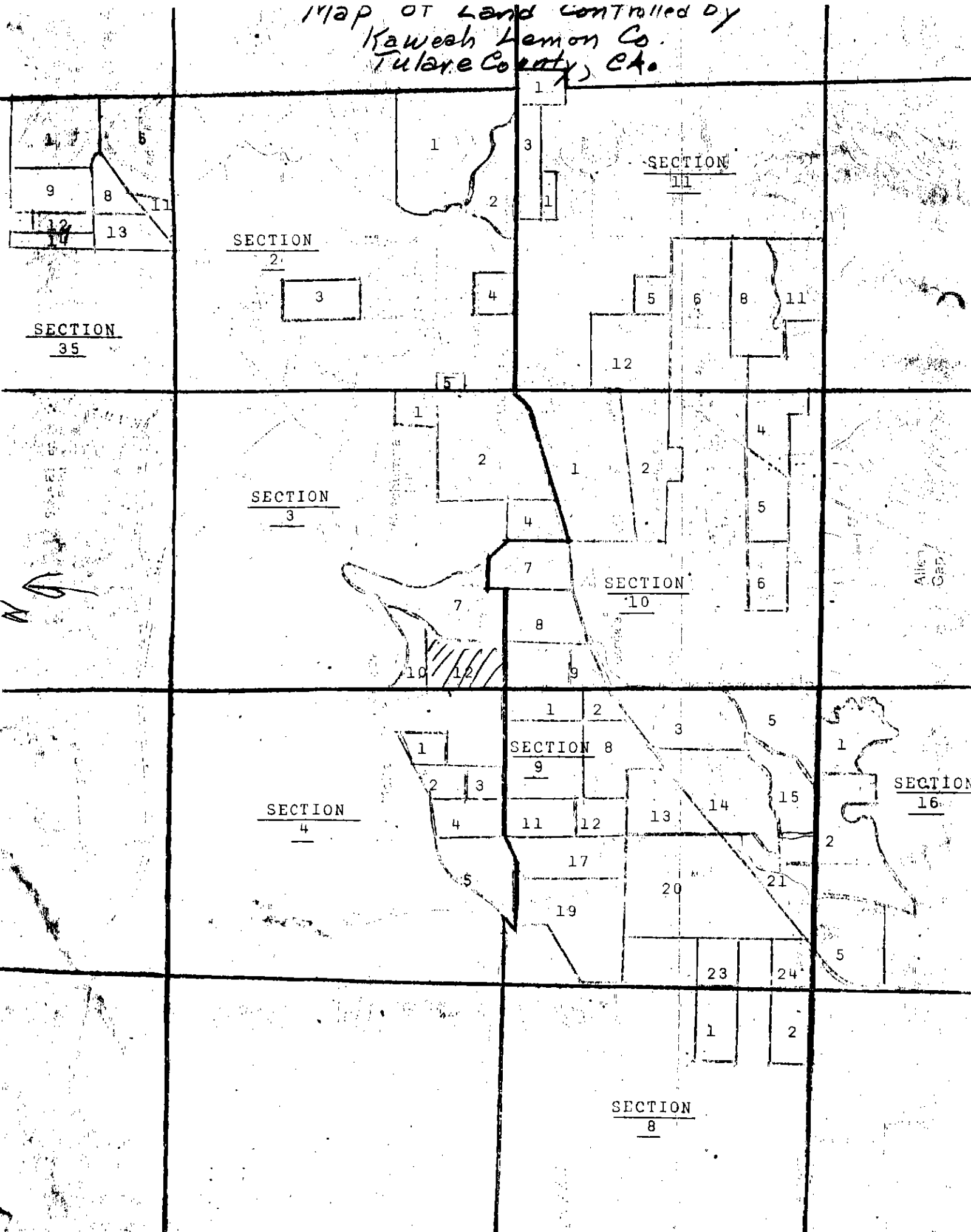
I recommend that the Tulare County Agricultural Commissioner's Office cancel the Carins' pesticide use permit for ethyl parathion and that low toxicity pesticides be used until this situation is resolved.

Attachments

cc John C. Hillis
David J. Bingham
William A. Betts
Herbert N. Bowden
Harold G. Alford

KTM/8-B-1-4

Map of Land controlled by
Kaweah Lemon Co.
Tulare County, Cal.



SECTION
35

SECTION
2

SECTION
11

SECTION
3

SECTION
10

SECTION
4

SECTION 8
9

SECTION
16

SECTION
8

(submit in duplicate)

WORKER SAFETY AND REGISTRATION REVIEW

REQUEST FOR AND REPORT OF ANALYSIS
Calif. Dept. of Food and Agriculture
Div. of Inspection Services

Date 6/16/75

Identification No. Kaweah 3-12 Plot 1 sample

Sample Type leaf punches - 100 discs

Sample Source Orange

Growth Stage Harvest-time

Analysis Required screen for organophosphates. Quantitative test for Cygon

Formulation and Strength _____

Dilution Used _____

Application Rate and Method _____

Other Chemicals Used on Crops _____

Date Treated unknown when sample collected

Sampling Interval _____

Inspector's Comments Tulare Co. Ag. Comm. Office will have above missing information

Submitted by: Maddy, K. T. , Cal Dept Food and Ag. Sac.
(Inspector) (Agency) (Address)

Lab #	% Recovery	Surface Residue (ppm)	Penetrated Residue (ppm)	Total Residue (ppm)
3-12	—	—	—	Dimethoate = 1.0 ppm Malathion = 0.4 ppm Parathion = 0.5 ppm

Method of Analysis GC Chemist P. L. Schloker

Sensitivity of Analysis _____ Date 6/17/75

Notebook Reference _____

Comments _____

(submit in duplicate)

WORKER SAFETY AND REGISTRATION REVIEW

Calif. DEPT. OF FOOD AND AGRICULTURE
Div of Inspection Services

Date 6/16/75

Identification No. Kaweah 3.5-12-Plot 3 samples

Sample Type Leaf punch - 100 discs

Sample Source Orange

Growth Stage Harvest time

Analysis Required Parathion, Fenoxone, Dieldrin, + DDT (2)

Formulation and Strength 8# Parathion 25% Wettable Powder = 2 lbs per Acre

Dilution Used 8#s Redtop 25% w.p. / 200 gal. / acre

Application Rate and Method 200 gal./acre

Other Chemicals Used on Crops Ag Comm. office has this info.

Date Treated presumed May 26, 1975

Sampling Interval _____

Inspector's Comments _____

Submitted by: Maddy, K.T. (Inspector), Cal. Dept Food and Ag. Serv CA (Agency), CA (Address)

Lab #	% Recovery	Surface Residue (ppm)		Penetrated Residue (ppm)		Total Residue (ppm)	
		XP	POA	P	POA	P	POA
1		0.4	1.7	4.2	0.5		
2		0.2	1.6	3.1	0.4		
3		—	—	—	—	5.1	2.6

Method of Analysis G.C. Chemist A.H.

Sensitivity of Analysis _____ Date 6-17-75

Notebook Reference _____

Comments _____

SCOTT FREDRICKSON

(submit in duplicate)

WORKER SAFETY AND REGISTRATION REVIEW

REQUEST FOR AND REPORT OF ANALYSIS
Calif. Dept of Food and Agriculture
Div. of Inspection Services

Date 6/16/75

Identification No. Kaweah Plot 35-1 3 samples
Sample Type leaf punch - 100 discs
Sample Source Orange
Growth Stage Harvest Time
Analysis Required Parathion paroxone ^{detectable + penetrated (2)}
total residue (1)
Formulation and Strength Same as for Kaweah 35-12
Dilution Used 8#s Red Top Parathion 25% W.P. / 200 gal./acre
Application Rate and Method 200 gal./acre
Other Chemicals Used on Crops Ag. Comm. Has this Info.
Date Treated presumed May 22, 1975
Sampling Interval _____
Inspector's Comments _____

Submitted by: W. K. T. Cal Dept. Food and Ag., Sac. CA
(Inspector) (Agency) (Address)

Lab #	% Recovery	Surface Residue (ppm)		Penetrated Residue (ppm)		Total Residue (ppm)	
		P	POA	P	POA	P	POA
1		0.8	1.2	3.8	0.9		
2		0.6	1.0	3.8	0.8		
3		—	—	—	—	4.5	2.4

Method of Analysis HPLC Chemist AF *

Sensitivity of Analysis _____ Date 6-17-75

Notebook Reference _____

Comments _____

(submit in duplicate)

REQUEST FOR AND REPORT OF ANALYSIS
 Calif. Dept. of Food and Agriculture
 Div of Inspection Services

Date 6/16/75Identification No. Neighbor's Atlas Grove just EastSample Type of Kaweah 35-1 plant, Kaweah Lemon CoSample Source leaf punches - 100 discs

Growth Stage _____

Analysis Required Screen for Organophosphates, probablyFormulation and Strength parathion - possible drift to 35-1

Dilution Used _____

Application Rate and Method _____

Other Chemicals Used on Crops Unknown

Date Treated _____

Sampling Interval _____

Inspector's Comments Tulare Co Ag Comm. officeCan Obtain above unknown informationSubmitted by: Madelly K.T. Cal. Dept Food and Ag. Sec
 (Inspector) (Agency) (Address)

Lab #	% Recovery	Surface Residue (ppm)	Penetrated Residue (ppm)	Total Residue (ppm)
35-1	—	—	—	Dimethoate = 4.5 ppm

Method of Analysis G.C. Chemist P.J. SchlicherSensitivity of Analysis _____ Date 6/17/75

Notebook Reference _____ by me

Comments _____

(submit in duplicate)

WORKER SAFETY AND REGISTRATION REVIEW

REQUEST FOR AND REPORT OF ANALYSIS
Calif Dept. of Food and Agriculture
Div. of Inspection Services

Date 6/17/75

Identification No. Kaweah Lemon Co

Sample Type WATER

Sample Source Rocky Hill ditch - Locale data available from

Growth Stage Tulare Co Ag. Comm. Office

Analysis Required Screen for Organophosphates Quant. for parathion,

Formulation and Strength _____

Dilution Used _____

Application Rate and Method _____

Other Chemicals Used on Crops _____

Date Treated _____

Sampling Interval _____

Inspector's Comments Field workers were said to have drunk

water from this source. Dr Lyness has dates of

Submitted by: Cary Frank, Cal Dept Food and Ag, Sec. CA
(Inspector) (Agency) (Address)

Lab #	% Recovery	Surface Residue (ppm)	Penetrated Residue (ppm)	Total Residue (ppm)
				Open Med Et Parathion (MDL < 0.01)

Method of Analysis Gas chromatography Chemist P.L. Schlocher

Sensitivity of Analysis _____ Date 6/17/75

Notebook Reference _____

Comments no phosphates found

Memorandum

To : David Bingham, Assistant Director

Date : June 24, 1975

Place: Sacramento

From : Department of Food and Agriculture John C. Hillis
 Chief of Agricultural Chemicals and Feed

Subject: Two Orange Pickers Hospitalized - Suspected Pesticide Poisoning

This afternoon we were notified by the Tulare County Agricultural Commissioner's office of two workers employed by Kaweah Lemon Co. that became ill while harvesting oranges. These workers were reportedly from the same crew that became ill approximately ten days ago.

We have informed Dr. Kahn of the State Health Department and Fred Ottoboni of the Department of Industrial Relations of this situation.

Dr. Kahn has called the Tulare County Health Officer and has informed us that he (County Health Officer) will issue a notice to Kaweah Lemon Co. that this crew, which has experienced organophosphate poisoning symptoms, may not work in any job involving exposure to organophosphate residues until the workers cholinesterase levels return to normal.

We do not believe any pesticide violations are involved in this incident.

cc: Wallace
Churchill
Information office
DeVol
Maddy
Betts
Enos

Memorandum

To : Lowell F. Chamberlen, M.D.
County Health Officer
Tulare County
County Civic Center
Visalia, California 93277

Date : June 26, 1975

Subject: Lemon Cove Pesticide
Poisoning

E. Kahn M.D.

From : Ephraim Kahn, M.D., Chief
Epidemiological Studies Laboratory
State Department of Health
2151 Berkeley Way, Room 335
Berkeley, California 94704

You will be interested in the recommendations of Dr. Keith Maddy, head of the Department of Food and Agriculture's Pesticide-Worker Safety Unit. He recommends that you advise the Kaweah Lemon Company as follows:

1. That all exposed workers found to have low cholinesterase levels be placed under medical supervision at the employer's expense.
2. That all their work clothes be collected and carefully laundered using alkaline detergent and bleach.
3. That the workers be provided with clean clothing, shower facilities and housing, and required to use them. Sleeping in groves to be prohibited.
4. That the workers be kept away from any exposure to cholinesterase-inhibiting substances for 30 days.
5. That an inspector from the County Agricultural Commissioner's Office, fluent in Spanish, explain to the workers their right to this type of protection and to the benefits of the Workmen Compensation system.
6. That the Agricultural Commissioner approve each job to be performed by members of this work crew for 30 days.
7. That the plasma and red cell cholinesterase levels of each worker be determined after 30 days and the results of these tests be discussed with you or the State Health Department before permitting further work exposure to cholinesterase-inhibiting substances.

Lowell F. Chamberlen, M.D.

-2-

June 26, 1975

8. That the Agricultural Commissioner's Office maintain close surveillance on these workers' work situations for an additional 30 days after they return to unrestricted work.

I agree with the above recommendations as being necessary and appropriate.

Please feel free to call on our office for any help we can provide.

EK:dn

bcc: Dr. Lyness
Dr. Maddy ✓
Mr. Mengle
Ms. Scott
Mr. Viveros

Memorandum

To : **James J. Kaistrom, Program Specialist
Agricultural Chemicals and Feed
and
Keith T. Maddy, D.V.M., M.P.H.
Staff Toxicologist
Agricultural Chemicals and Feed**

Date : **June 26, 1975**

Place: **Sacramento**

From : **Department of Food and Agriculture - William A. Betts, Program Supervisor
Agricultural Chemicals and Feed**

Subject: **Needed Laboratory Reports to Support Legal Action in Tulare County**

The Tulare County Agricultural Commissioner's Office has requested that analyses be promptly completed and copies of laboratory reports be sent to their office as soon as possible to support their criminal complaint against the citrus grower for violations of our Pesticide Worker Safety Regulation.

Samples in question involve parathion formulations delivered to Sacramento by Jim Lucid on June 23, 1975, and a number of residue samples (follage, soil, water, etc.) drawn by Gary Sprock on the week of June 16.

Please identify those samples not already analyzed so the laboratory can process them promptly and see that Tulare County is sent a copy of each laboratory report pertaining to the illness of citrus pickers employed by Kaweah Citrus Company.

cc Balano
Chasehill
DeVel
Ecos

WAB/7/F-05

Memorandum

To : D. W. Dean, Program Supervisor
Agricultural Chemicals and Feed

Date: June 27, 1975

Place: Sacramento

From : Department of Food and Agriculture - James B. Knask, Staff Toxicologist
Agricultural Chemicals and Feed

Subject: Citrus Workers Employed by Kaweah Lemon Company, Lemon Cove

As of Friday morning, June 27, 1975, the field workers employed by the Kaweah Lemon Company were still sleeping in the grove. The company has living quarters for these workers. The workers do not wish to use these quarters as they are subject to being picked up by immigration authorities at this location during evening hours. In order to prevent this from happening and to effect the removal of the workers from the grove, the County Medical Officer was to give each worker a card indicating they were under a physician's care and should not be transferred. According to Dr. Lyness, this work was waiting, pending the return of the Doctor from the coast. I told him that any licensed physician could sign the cards and for him to try to take care of this before the weekend (June 28-29). Dr. Lyness will also obtain blood from the workers for analysis in our lab. Sample of clothing will also be obtained for analysis.

cc ✓K. T. Maddy
J. C. Hillis

JHK/8-D-5

Memorandum

To : John C. Hillis, Chief
Agricultural Chemicals and Feed

Date : June 30, 1975

Place: Sacramento

From : Department of Food and Agriculture

- James B. Knaak, Staff Toxicologist
Agricultural Chemicals and Feed

Subject: Parathion-Paraoxon Residues in Citrus Grove of Kaweah Lemon Company, Lemon Grove

I called Dr. Francis Gunther on Friday (June 27, 1975) to obtain information on the level of parathion and paraoxon in the grove(s) as determined by the University of California at Riverside. Low levels were found as dislodgeable residues on leaves (0.01 ug/sq. cm). Dust samples contained higher amounts of parathion (25 ppm) and paraoxon (18 ppm). The quantities in soil are sufficiently large enough to have caused the depression of blood cholinesterase in field workers. Francis suggested watering the soil in the grove(s) and checking the residue level several days later.

I called Clyde Churchill, Agricultural Commissioner, Tulare County, and relayed the message to him. I suggested he have the Kaweah Lemon Company water down all treated areas. If analytical results several days later indicate the residue has disappeared, the groves should be safe for workers with normal cholinesterase levels.

cc D. W. Dean
✓ K. T. Maddy

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COLLEGE OF NATURAL AND
AGRICULTURAL SCIENCES
CITRUS RESEARCH CENTER AND
AGRICULTURAL EXPERIMENT STATION
DEPARTMENT OF ENTOMOLOGY

RIVERSIDE, CALIFORNIA 92502

June 27, 1975

Dr. Robert C. Spear
Department of Public Health
103 Earl Warren Hall
University of California
Berkeley, California 94720

Dear Bob:

Enclosed are our analytical results for parathion and paraoxon from the Tulare County citrus groves of recent interest to us all. The results are self-explanatory. Note the high levels in soil "dust" for blocks 3501 and 3512 and the probably significant levels in the soil "dust" from under the "bedroom" tree. How do your results compare with ours?

Best regards,

A handwritten signature in cursive script, appearing to read "Francis", is written above the typed name.

Francis A. Gunther
Professor of Entomology
and Chemist

FAG:ald

Enclosures

cc: B. Bailey
G. Carman
C. Churchill
J. Hillis
K. Maddy ✓
O. Paynter

16-10-117

CALIFORNIA DEPARTMENT OF AGRICULTURE
Chemistry Laboratory Services

REQUEST FOR ANALYSIS AND REPORT OF ANALYSIS
ON MATERIALS SUBMITTED BY
COLLABORATING PUBLIC AGENCIES

RECEIVED
JUN 28 1975
TULARE COUNTY
AGRICULTURAL COMMISSION

This form will be returned to you. Please type or print your name legibly with black ink and fill out form as completely as possible.

INFORMATION NO. 46532
Date Received 6/17/75

(For Laboratory Use Only)

LYDE R. CHURCHILL, AGRIC. COMM.
Name
1414 N. ST. & WOODLAND DR., COUNT CIVIC CENTER
Number Street
VISALIA CA 93277
State Zip

cc: DeLano
Kalstrom (2)
Voigt
Strickler
Maddaly

Portion of sample ORANGE TREE LEAVES & TWIGS
Identification marks C 54-274
Type of sample KAIWEAH LEMON, LEMON COVE, BLK. #07 & #35-12 BELOW DAM.
Detailed description of problem 3 ORANGE PICKERS IN HOSPITAL & 4 OTHERS HAVE EXPERIENCED ORGANO PHOSPHATE POISONING SYMPTOMS.

I hereby certify that the analysis requested is necessary in connection with matters relating to official duties.

Samples
mailed
Samples
Not
Refrigerated

By John R. Carter

Agency AGRIC. COMM.

County TULARE Date 6-13-75

State accurately analysis required

PARATHION

Laboratory Findings

Sample received in
Laboratory 6/17/75 P.M.

Orange leaves

ethyl parathion 0.75 ppm

Para oxone 0.42 ppm

Twigs & leaves (below dam)

ethyl parathion 0.95 ppm

Para oxone 0.51 ppm

J. Taylor
Chemist / 1011-2

PR/OR 171

CALIFORNIA DEPARTMENT OF AGRICULTURE
Chemistry Laboratory Services

REQUEST FOR ANALYSIS AND REPORT OF ANALYSIS
ON MATERIALS SUBMITTED BY
COLLABORATING PUBLIC AGENCIES

This form will be returned to you. Please type or print your
legibly with black ink and fill out form as completely as
possible.

INFORMATION NO. FL 17-620

Date Received 6-25-75

(For Laboratory Use Only)

DE R. CHURCHILL,
AGRIC. COMM.
MAIN ST. & WOODLAND DR. COUNTY CIVIC CTN.
SALIA CA. 93227
State Zip

cc DeLano
Kalstrom
Dean/Maddy
Betts
Enos/Cardoso

Portion of sample ORANGE FRUITS & FOLIAGE

Identification marks C-54-284

Source of sample KALWEAH LEMON COMPANY P.O. BOX 325, LEMON CAVE, CA.

Short description of problem 3 WORKERS TAKEN TO HOSP. 3-24-75 WITH
SYMPTOMS DESCRIBED AS PARATHION POISONING.

I hereby certify that the analysis requested is necessary in connection with matters relating to
official duties.

By John R. Carter

Agency AGRIC. COMM.

County TULARE Date 6-24-75

State accurately analysis required

SAMPLE #1 - FOLIAGE

LAD No. "F" No.
26,676

Laboratory Findings
PARATHION, ppm Malathion
0.15 0.28

" #2 - " "

26,677

0.38 0.39

" #3 - ORANGE
(32 BINS)

26,678

TOTAL
0.07 DISSEMINABLE

SAMPLE #4 - ORANGES
(15 BINS)

26,679

0.005 (DISSEMINABLE)

Wm. D. Lewis

Chemist 6-25-75

Date

I-1~I-4

PRIORITY

#1

CALIFORNIA DEPARTMENT OF AGRICULTURE Chemistry Laboratory Services

REQUEST FOR ANALYSIS AND REPORT OF ANALYSIS ON MATERIALS SUBMITTED BY COLLABORATING PUBLIC AGENCIES

NOTICE: This form will be returned to you. Please type or print your address legibly with black ink and fill out form as completely as possible.

INFORMATION NO. F6172620Date Received 6-25-75

(For Laboratory Use Only)

CLYDE R. CHURCHILL
KALWEAH LEMON CO. AGRIC. COMM.
Name
W. MAIN ST. & WOODLAND DR. COUNTY CIVIC CTN.
Number USAIA Street CA. 93227
State Zip

cc DeLano
Kalstrom
Dean/Maddy
Betts
Enos/Cardoso

Description of sample ORANGE FRUITS & FOLIAGEIdentification marks C-54-284Source of sample KALWEAH LEMON COMPANY P.O. BOX 325, LEMON CAVE, CA.

Detailed description of problem 3 WORKERS TAKEN TO HOSP. 3-24-75 WITH
SYMPTOMS DESCRIBED AS PARATHION POISONING.

I hereby certify that the analysis requested is necessary in connection with matters relating to my official duties.

By John R. CarterAgency AGRIC. COMM.County TULARE Date 6-24-75

State accurately analysis required

SAMPLE #1 - FOLIAGE

LAB No. "F" No.

26,676

Laboratory Findings

PARATHION, ppm Malathion

0.15

0.28

" #2 - "

26,677

0.38

0.39

" #3 - ORANGE
(32 BINS)

26,678

TOTAL
0.07 DISULFOGENALS

0.005 (DISULFOGENALS)

SAMPLE #4 - ORANGES
(15 BINS)

26,679

Wm. D. Lewis
Chemist 6-25-75

CALIFORNIA DEPARTMENT OF AGRICULTURE
Chemistry Laboratory Services

REQUEST FOR ANALYSIS AND REPORT OF ANALYSIS
ON MATERIALS SUBMITTED BY
COLLABORATING PUBLIC AGENCIES

This form will be returned to you. Please type or print your name legibly with black ink and fill out form as completely as possible.

INFORMATION NO. E-6215622
Date Received 6-26-75
(For Laboratory Use Only)

TULARE COUNTY AGR. COMM. - CLYDE CHURCHILL

Name
TULARE COUNTY CIVIC CENTER
Number Street

cc DeLano
Kalstrom
Dean/Maddy
Betts
Enos/Cardoso

VISALIA State CALIFORNIA Zip 93277

Description of sample CITRUS LEAVES & ORANGES

Identification marks C-54-280

Source of sample KAWAHA LEMON CO. (Sec 9 Bk. 21)

Detailed description of problem Suspect Pesticide Residue, Workers getting organophosphate poisoning.

I hereby certify that the analysis requested is necessary in connection with matters relating to official duties.

By Joseph Romaniuk

Agency Tulare County Agri Comm

County Tulare Date 6-25-75

State accurately analysis required

MALATHION :

1) CITRUS LEAVES →

LAB No.	F. No.	Laboratory Findings		
		Diazinon, ppm	MALATHION	DIAZINON
26,680	F 621	0.38	0.18	0.39

2) ORANGES (Fruit) →

26,681	F 622	0.27, total - whole fruit basis		
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Chemist W. D. Hume

Date 6-26-75

CALIFORNIA DEPARTMENT OF AGRICULTURE
Chemistry Laboratory Services

REQUEST FOR ANALYSIS AND REPORT OF ANALYSIS
ON MATERIALS SUBMITTED BY
COLLABORATING PUBLIC AGENCIES

This form will be returned to you. Please type or print your
as legibly with black ink and fill out form as completely as
ble.

INFORMATION NO. F-6236624

Date Received 6-24-75

(For Laboratory Use Only)

TULARE COUNTY AGRI. COMM. - Clyde Churchill

County CIVIC CENTER
Number Street

City SAHIA State CALIFORNIA Zip 93277

cc Delano
Kalstrom
Dean/Maddy
Betts
Enos/Cardoso

Portion of sample CITRUS LEAVES & ORANGES

Identification marks C-54-281

Source of sample KAWEAH LEMON CO. (Sec 35 Bk. I)

Short description of problem Suspect Pesticide Residue; Workers
getting organophosphate poisoning.

I hereby certify that the analysis requested is necessary in connection with matters relating to
official duties.

By Joseph Romani

Agency AGRICULTURAL COMMISSION

County Tulare Date 6-25-75

State accurately analysis required

PARATHION:

Laboratory Findings

PARATHION, ppm. Malathion

LAB No. F No.

1) Citrus Leaves →

26,682 F-623

0.13 0.23

2) ORANGES →
(Fruit)

26,683 F-624

0.002 0.007

Chemist Dr. M. Lewis

Date 6-26-75

CALIFORNIA DEPARTMENT OF AGRICULTURE
Chemistry Laboratory Services

REQUEST FOR ANALYSIS AND REPORT OF ANALYSIS
ON MATERIALS SUBMITTED BY
COLLABORATING PUBLIC AGENCIES

E: This form will be returned to you. Please type or print your
ss legibly with black ink and fill out form as completely as
ble.

INFORMATION NO. F-65,63
Date Received 6-26-75
(For Laboratory Use Only)

TULARE COUNTY AGRIC. COMM. - Clyde Churchill
Name
TULARE COUNTY CIVIC CENTER
Number Street
15 ALIA CALIFORNIA State 93277 Zip

cc Delano
Kalstrom
Dean/Maddy
Betts
Enos/Cardoso

Description of sample CITRUS leaves (Samples A, B, & C)
Identification marks C-54-282
Source of sample KAWEAH LEMON CO. (Sec 2 Blk 3)
Detailed description of problem Suspect Pesticide Residue; Workers
getting organophosphate poisoning

I hereby certify that the analysis requested is necessary in connection with matters relating to
Official duties.

By Hector R. Pinto & Joe Romani

Agency AGRICULTURAL COMMISSION
County TULARE Date 6-25-75

State accurately analysis required

PARATHION:

- 1) SAMPLE A →
(Jesus Lugo)
- 2) SAMPLE B →
(Abelardo Curiel)
- 3) SAMPLE C →
(Pedro Nabarrete)

LAB No. "F" No	Laboratory Findings					
	Found, ppm					
	Dimethoate	Diazinon	Phosphon	Malathion		
26,684 F-625	0.01	0.02	0.02	0.01		
26,685 F-626	0.02	0.02	0.03	0.02		
26,686 F-627	0.02	0.02	0.03	0.07		

Wm. O'Leary
Chemist 6-30-75
Date

CALIFORNIA DEPARTMENT OF AGRICULTURE
Chemistry Laboratory Services

REQUEST FOR ANALYSIS AND REPORT OF ANALYSIS
ON MATERIALS SUBMITTED BY
COLLABORATING PUBLIC AGENCIES

TULARE COUNTY
AGRICULTURAL COMMISSIONER

This form will be returned to you. Please type or print your name legibly with black ink and fill out form as completely as possible.

INFORMATION NO. F-625

Date Received 6-27-75

(For Laboratory Use Only)

Tulare County Agri. Comm. Clyde Churchill

County Civic Center

Number Street

City Visalia State California Zip 93277

cc DeLano
Kalstrom
Dean/Maddy
Betts
Enos/Cardoso

Portion of sample Orange Blanket

Identification marks C-54-279

Location of sample Bedding of Pedro Nabaret's Sec 2 Block 3
Block South of Kaweah Lemon Maintenance Shop.

Detailed description of problem

Suspect Pesticide Residue, Workers
getting organophosphate poisoning

I hereby certify that the analysis requested is necessary in connection with matters relating to official duties.

By Victor R. Pantoja

Agency Tulare County Agri. Comm.

County Tulare Date 6-25-75

State accurately analysis required

Laboratory Findings

SUBSTANCES:

1 Blanket →

LAB No. "F" No.

26,687 F-625

PARATHION ppm

0.75 ± 2.89 micrograms
per sq. in.

Chemist

Date 6-30-75

CALIFORNIA DEPARTMENT OF AGRICULTURE
Chemistry Laboratory Services

REQUEST FOR ANALYSIS AND REPORT OF ANALYSIS
ON MATERIALS SUBMITTED BY
COLLABORATING PUBLIC AGENCIES

NOTE: This form will be returned to you. Please type or print your
address legibly with black ink and fill out form as completely as
possible.

INFORMATION NO. F-632
Date Received 6-26-75
(For Laboratory Use Only)

Name Tulare County Agri. Comm. - Clyde Churchill

cc DeLano
Kalstrom
Dean/Maddy
Betts
Enos/Cardoso

Number County Civic Center Street
Visalia State CALIFORNIA Zip 93277

Description of sample ORANGE TREE LEAFS
Identification marks SAMPLE #1 C-54-283
Source of sample Kaweah Lemon Co. Sec. 11 Block #1 (next hill east of Hwy 198)
Detailed description of problem

Suspect pesticide residue; Workers showing symptoms of organophosphate poisoning

Agency hereby certifies that the analysis requested is necessary in connection with matters relating to official duties.

By Arthur R. Puto & Joseph Romani

Agency TULARE CO. Agri. Comm.

County TULARE Date 6-26-75

State accurately analysis required

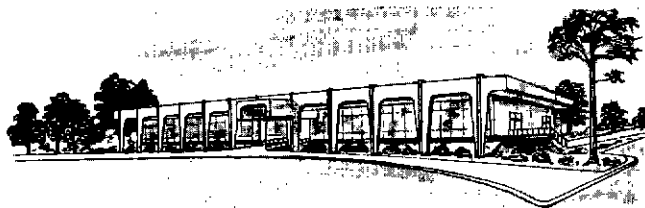
Parathion

LAB No. 26,640 "F" No. F-632

Laboratory Findings
Found
Parathion ppm
0.02

Wm. DeLano
Chemist
Date 6-30-75

CLYDE R. CHURCHILL
AGRICULTURAL COMMISSIONER



TELEPHONE 732-5511 EXT. 306

OFFICE OF
TULARE COUNTY AGRICULTURAL COMMISSIONER

COUNTY CIVIC CENTER
VISALIA, CALIFORNIA 93277

July 9, 1975

Mr. John Hillis
Chief Agricultural Chemical Div.
Department of Food and Agri.
1220 "N" Street
Sacramento, CA 95814

Dear John:

June 24, 1975 a quarantine was placed on all properties under the control of Kaweah Lemon Company that had been treated with either an Organophosphate or Cambamate pesticide for a period of sixty (60) days. This was done due to one of their picking crews being treated for symptoms diagnosed as Organophosphate poisoning.

Samples of foliage and fruits have been taken for Organophosphate residue from all fields with fruit remaining on the trees (laboratory residue analysis sheets attached). As you can see, all samples submitted by this office have been below one (1) ppm.

We are attaching copies of Blair Bailey's laboratory analysis sheets also for your review.

Kaweah Lemon Company is requesting the quarantine be lifted so they may continue harvest operations as soon as possible.

After considering the facts, what would you recommend?

Sincerely,

Clyde R. Churchill
Agricultural Commissioner

CRC:cd

Enc.

CALIFORNIA DEPARTMENT OF AGRICULTURE
Chemistry Laboratory Services

REQUEST FOR ANALYSIS AND REPORT OF ANALYSIS
ON MATERIALS SUBMITTED BY
COLLABORATING PUBLIC AGENCIES

46750-46759

NOTICE: This form will be returned to you. Please type or print your address legibly with black ink and fill out form as completely as possible.

INFORMATION NO.
Date Received 7-3-75
(For Laboratory Use Only)

Name <u>CLYDE R. CHURCHILL</u>		cc: DeLano Stanton (S) Voigt Stanton Conrad KNAK
Address <u>10 MAIN ST. WOODLAND DR.</u>		
Number <u>145A11A</u>	Street <u>CA.</u>	
State <u>CA.</u>	Zip <u>93277</u>	

Description of sample 10 SAMPLES OF BLOOD
Identification marks C-54-286
Source of sample WORKERS OF KAUAAH LEMON CO.
Detailed description of problem RE-TESTING FOR CHOLINESTERASE. 7 OF THE
WORKERS WERE TREATED FOR SYMPTOMS OF ORGANOPHOSPHATE
POISONING.

I hereby certify that the analysis requested is necessary in connection with matters relating to my official duties.
SAMPLES DRAWN BY TULARE
COUNTY HEALTH DEPARTMENT
By John R. Carter
Agency AGRIC. COMM.
County TULARE Date 7-3-75

State accurately analysis required	Laboratory Findings
CHOLINESTERASE, RBC & SERUM LEVELS —	SEE ATTACHED SHEETS
	<u>J. Scott Anderson</u> Chemist <u>7-3-75</u>

Numero de
identificacion 4
Fecha 7-3-75
Edad _____
Sexo F/M
Nacionalidad _____
Medicacion _____
Ocupacion _____

FECHA *	RANCHO	FRUTAS	AREAS	LAB. USE
				Hem. <u>.45</u>
				W.B. <u>17.79</u>
				Plasma <u>11.32</u>
				RBC <u>25.70</u>

* Areas donde ha trabajado los ultimos 30 dias

Yo entiendo que una prueba de colinesterase (prueba para envenenamiento por pesticida) se hara con mi sangre gratuitamente. Yo entiendo que si' los resultados no son normales sere notificado.

Firma _____ Direccione _____
(Est. 5-75) 57-034A

Numero de
identificacion 5
Fecha 7-3-75
Edad _____
Sexo F/M
Nacionalidad _____
Medicacion _____
Ocupacion _____

FECHA *	RANCHO	FRUTAS	AREAS	LAB. USE
				Hem. <u>.47</u>
				W.B. <u>17.94</u>
				Plasma <u>9.56</u>
				RBC <u>27.40</u>

* Areas donde ha trabajado los ultimos 30 dias

Yo entiendo que una prueba de colinesterase (prueba para envenenamiento por pesticida) se hara con mi sangre gratuitamente. Yo entiendo que si' los resultados no son normales sere notificado.

Firma _____ Direccione _____
(Est. 5-75) 57-034A

Numero de
 identificacion 8
 Fecha 7-3-75
 Edad _____
 Sexo F/M
 Nacionalidad _____
 Medicacion _____
 Ocupacion _____

FECHA *	RANCHO	FRUTAS	AREAS	LAB. USE
				Hem. <u>9.5</u>
				W.B. <u>19.06</u>
				Plasma <u>6.47</u>
				RBC <u>23.34</u>

* Areas donde ha trabajado los ultimos 30 dias

Yo entiendo que una prueba de colinesterase (prueba para envenenamiento por pesticida) se hara con mi sangre gratuitamente. Yo entiendo que si' los resultados no son normales sere notificado.

Firma _____ Direccione _____
 (Est. 5-75) 57-034A

Numero de
 identificacion 2
 Fecha 7-3-75
 Edad _____
 Sexo F/M
 Nacionalidad _____
 Medicacion _____
 Ocupacion _____

FECHA *	RANCHO	FRUTAS	AREAS	LAB. USE
				Hem. <u>.57</u>
				W.B. <u>19.15</u>
				Plasma <u>8.14</u>
				RBC <u>27.96</u>

* Areas donde ha trabajado los ultimos 30 dias

Yo entiendo que una prueba de colinesterase (prueba para envenenamiento por pesticida) se hara con mi sangre gratuitamente. Yo entiendo que si' los resultados no son normales sere notificado.

Firma _____ Direccione _____
 (Est. 5-75) 57-034A

Numero de
 identificacion 3
 Fecha 7-3-75
 Edad _____
 Sexo F/M
 Nacionalidad _____
 Medicacion _____
 Ocupacion _____

FECHA *	RANCHO	FRUTAS	AREAS	LAB. USE
				Hem. <u>.47</u>
				W.B. <u>16.98</u>
				Plasma <u>9.69</u>
				RBC <u>24.19</u>

* Areas donde ha trabajado los ultimos 30 dias

Yo entiendo que una prueba de colinesterase (prueba para envenenamiento por pesticida) se hara con mi sangre gratuitamente. Yo entiendo que si' los resultados no son normales sere notificado.

Firma _____ Direccione _____
 (Est. 5-75) 57-034A

Pooled HUMAN SERUM

Numero de Sigma Serum
 identificacion _____
 Fecha 7-3-75
 Edad _____
 Sexo F/M
 Nacionalidad _____
 Medicacion _____
 Ocupacion _____

FECHA *	RANCHO	FRUTAS	AREAS	LAB. USE
				Hem. _____ W.B. _____ Plasma <u>5.50</u> RBC _____

A.S. Fialabrino
7-3-75

* Areas donde ha trabajado los ultimos 30 dias

Yo entiendo que una prueba de colinesterase (prueba para envenenamiento por pesticida) se hara con mi sangre gratuitamente. Yo entiendo que si' los resultados no son normales sere notificado.

Firma _____ Direccione _____
 (Est. 5-75) 57-034A

Numero de
 identificacion 10
 Fecha 7-3-75
 Edad _____
 Sexo F/M
 Nacionalidad _____
 Medicacion _____
 Ocupacion _____

FECHA *	RANCHO	FRUTAS	AREAS	LAB. USE
				Hem. <u>4.4</u> W.B. <u>16.99</u> Plasma <u>10.94</u> RBC <u>24.68</u>

* Areas donde ha trabajado los ultimos 30 dias

Yo entiendo que una prueba de colinesterase (prueba para envenenamiento por pesticida) se hara con mi sangre gratuitamente. Yo entiendo que si' los resultados no son normales sere notificado.

Firma _____ Direccione _____
 (Est. 5-75) 57-034A

Numero de
 identificacion 9
 Fecha 7-3-75
 Edad _____
 Sexo F/M
 Nacionalidad _____
 Medicacion _____
 Ocupacion _____

FECHA *	RANCHO	FRUTAS	AREAS	LAB. USE
				Hem. <u>4.4</u> W.B. <u>15.02</u> Plasma <u>5.94</u> RBC <u>26.58</u>

* Areas donde ha trabajado los ultimos 30 dias

Yo entiendo que una prueba de colinesterase (prueba para envenenamiento por pesticida) se hara con mi sangre gratuitamente. Yo entiendo que si' los resultados no son normales sere notificado.

Firma _____ Direccione _____
 (Est. 5-75) 57-034A

Numero de
identificacion 7
Fecha 7-3-75
Edad _____
Sexo F/M
Nacionalidad _____
Medicacion _____
Ocupacion _____

FECHA *	RANCHO	FRUTAS	AREAS	LAB. USE
				Hem. <u>.46</u> W.B. <u>10.93</u> Plasma <u>5.73</u> RBC <u>15.95</u>

* Areas donde ha trabajado los ultimos 30 dias

Yo entiendo que una prueba de colinesterase (prueba para envenenamiento por pesticida) se hara con mi sangre gratuitamente. Yo entiendo que si' los resultados no son normales sere notificado.

Firma _____ Direccione _____
(Est. 5-75) 57-034A

Numero de
identificacion 6
Fecha 7-3-75
Edad _____
Sexo F/M
Nacionalidad _____
Medicacion _____
Ocupacion _____

FECHA *	RANCHO	FRUTAS	AREAS	LAB. USE
				Hem. <u>.45</u> W.B. <u>7.4</u> Plasma <u>3.56</u> RBC <u>12.11</u>

* Areas donde ha trabajado los ultimos 30 dias

Yo entiendo que una prueba de colinesterase (prueba para envenenamiento por pesticida) se hara con mi sangre gratuitamente. Yo entiendo que si' los resultados no son normales sere notificado.

Firma _____ Direccione _____
(Est. 5-75) 57-034A

Numero de
identificacion 1
Fecha 7-3-75
Edad _____
Sexo F/M
Nacionalidad _____
Medicacion _____
Ocupacion _____

FECHA *	RANCHO	FRUTAS	AREAS	LAB. USE
				Hem. <u>.46</u> W.B. <u>7.56</u> Plasma <u>7.50</u> RBC <u>7.63</u>

* Areas donde ha trabajado los ultimos 30 dias

Yo entiendo que una prueba de colinesterase (prueba para envenenamiento por pesticida) se hara con mi sangre gratuitamente. Yo entiendo que si' los resultados no son normales sere notificado.

Firma _____ Direccione _____
(Est. 5-75) 57-034A